

What is claimed is:

1. A semi-transmissive type liquid crystal display device comprising:

5       a semi-transmissive type liquid crystal display cell having a lower substrate, an upper substrate which constitutes an observation side, a liquid crystal layer sandwiched between the lower substrate and the upper substrate, a lower orientation film which is formed over a surface of the lower substrate which  
10 is brought into contact with the liquid crystal layer, and an upper orientation film formed over a surface of the upper substrate which is brought into contact with the liquid crystal layer;

          an upper polarizer arranged at a side of the upper substrate  
15 opposite to the liquid crystal layer;

          an upper  $\lambda/2$  phase difference plate arranged between the upper polarizer and the upper substrate;

          an upper  $\lambda/4$  phase difference plate arranged between the upper  $\lambda/2$  phase difference plate and the upper substrate;

20       a lower polarizer arranged at a side of the lower substrate opposite to the liquid crystal layer;

          a lower  $\lambda/2$  phase difference plate arranged between the lower polarizer and the lower substrate;

          a lower  $\lambda/4$  phase difference plate arranged between the  
25 lower  $\lambda/2$  phase difference plate and the lower substrate; and

an optical film having negative uniaxial double refractive index ellipsoids arranged between the lower  $\lambda/4$  phase difference plate and the lower substrate, wherein

a twist angle of the liquid crystal layer is larger than  
5  $0^\circ$  and equal to or smaller than  $90^\circ$ ,

the orientation axis direction of the optical film having negative uniaxial double refractive index ellipsoids is arranged within a range of  $-5^\circ$  to  $+5^\circ$  with respect to the direction which is rotated by  $90^\circ$  in the clockwise direction from a resultant  
10 vector of the orientation axis direction of the upper orientation film and the orientation axis direction of the lower orientation film of the liquid crystal display cell, and

a phase lagging axis of the lower  $\lambda/4$  phase difference plate is arranged within a range of  $-10^\circ$  to  $+10^\circ$  with respect  
15 to the orientation axis direction of the optical film having negative uniaxial double refractive index ellipsoids, and a phase lagging axis of the upper  $4/\lambda$  phase difference plate is arranged within a range of  $-5^\circ$  to  $+5^\circ$  with respect to the direction which is rotated  $90^\circ$  in the clockwise direction from a resultant vector  
20 of the orientation axis direction of the upper orientation film and the orientation axis direction of the lower orientation film of the liquid crystal display cell.

2. A semi-transmissive type liquid crystal display device according to claim 1, wherein the lower  $\lambda/4$  phase difference  
25 plate is formed of a three-dimensional refractive index control

type phase difference plate having a  $N_z$  coefficient of  $-1 \leq N_z < 1$ , wherein the  $N_z$  coefficient indicates a three-dimensional refractive index.

3. A semi-transmissive type liquid crystal display device  
5 according to claim 1, wherein the upper  $\lambda/4$  phase difference plate is formed of a three-dimensional refractive index control type phase difference plate having a  $N_z$  coefficient of  $-1 \leq N_z < 1$ , wherein the  $N_z$  coefficient indicates a three-dimensional refractive index.

10 4. A semi-transmissive type liquid crystal display device according to claim 1, wherein both of the lower  $\lambda/4$  phase difference plate and the upper  $\lambda/4$  phase difference plate are formed of a three-dimensional refractive index control type phase difference plate having a  $N_z$  coefficient of  $-1 \leq N_z < 1$ , wherein  
15 the  $N_z$  coefficient indicates a three-dimensional refractive index.

5. A semi-transmissive type liquid crystal display device according to claim 1, wherein the liquid crystal display device includes a backlight.

20 6. A liquid crystal display device comprising:

a semi-transmissive type liquid crystal display cell having a lower substrate, an upper substrate which constitutes an observation side, a liquid crystal layer sandwiched between the lower substrate and the upper substrate, a lower orientation  
25 film which is formed over a surface of the lower substrate which

is brought into contact with the liquid crystal layer, and an upper orientation film formed over a surface of the upper substrate which is brought into contact with the liquid crystal layer;

5           an upper polarizer arranged at a side of the upper substrate opposite to the liquid crystal layer;

          an upper  $\lambda/2$  phase difference plate arranged between the upper polarizer and the upper substrate;

          an upper  $\lambda/4$  phase difference plate arranged between the  
10   upper  $\lambda/2$  phase difference plate and the upper substrate;

          a lower polarizer arranged at a side of the lower substrate opposite to the liquid crystal layer;

          a lower  $\lambda/2$  phase difference plate arranged between the lower polarizer and the lower substrate;

15           a lower  $\lambda/4$  phase difference plate arranged between the lower  $\lambda/2$  phase difference plate and the lower substrate; and

          an optical film having negative uniaxial double refractive index ellipsoids arranged between the lower  $\lambda/4$  phase difference plate and the lower substrate, wherein

20           a twist angle of the liquid crystal layer is  $0^\circ$ ,

          the orientation axis direction of the optical film having negative uniaxial double refractive index ellipsoids is arranged within a range of  $-5^\circ$  to  $+5^\circ$  with respect to the orientation axis direction of the lower orientation film of the liquid crystal

25   display cell, and

a phase lagging axis of the lower  $\lambda/4$  phase difference plate is arranged within a range of  $-10^\circ$  to  $+10^\circ$  with respect to the orientation axis direction of the optical film having negative uniaxial double refractive index ellipsoids, and a phase lagging axis of the upper  $\lambda/4$  phase difference plate is arranged within a range of  $-5^\circ$  to  $+5^\circ$  with respect to the orientation axis direction of the upper orientation film of the liquid crystal display cell.

7. A semi-transmissive type liquid crystal display device according to claim 6, wherein the lower  $\lambda/4$  phase difference plate is formed of a three-dimensional refractive index control type phase difference plate having a  $N_z$  coefficient of  $-1 \leq N_z < 1$ , wherein the  $N_z$  coefficient indicates a three-dimensional refractive index.

8. A semi-transmissive type liquid crystal display device according to claim 6, wherein the upper  $\lambda/4$  phase difference plate is formed of a three-dimensional refractive index control type phase difference plate having a  $N_z$  coefficient of  $-1 \leq N_z < 1$ , wherein the  $N_z$  coefficient indicates a three-dimensional refractive index.

9. A semi-transmissive type liquid crystal display device according to claim 6, wherein both of the lower  $\lambda/4$  phase difference plate and the upper  $\lambda/4$  phase difference plate are formed of a three-dimensional refractive index control type phase difference plate having a  $N_z$  coefficient of  $-1 \leq N_z < 1$ , wherein

the  $N_z$  coefficient indicates a three-dimensional refractive index.

10. A semi-transmissive type liquid crystal display device according to claim 6, wherein the liquid crystal display device  
5 includes a backlight.